RLBCAU NEWS LETTER

Solutions for a New Generation

2022

Volume: 01

Issue: 03

July-September

Content

From the Vice-Chancellor Desk

Agricultural production is often seriously constrained by climate change that is experienced in terms of abrupt rise and drop in temperature, higher frequency of heavy precipitation and frequent dry spells, reduced number of rainy days, and fog. Increasing agricultural productivity to feed the ever-growing population in view of the face of changing climate and degraded land resources leads to additional degradation and depletion of soil nutrients' stocks. The changing climatic conditions and extremes negatively affect all types of food security, namely food availability, access, utilization and stability. Climate changes have an adverse effect on agriculture and different agricultural activity in different ways e.g., variations in annual rainfall, global warming, emission of greenhouse gases and pests or microbes. The unequivocal change in climate has been observed throughout the world with an average increase in human-induced global surface temperature in 2010–2019 relative to 1850–1900 is 1.07°C. In India, there has been a temperature rise of 0.45 and 0.63°C in kharif and rabi, respectively while rainfall has declined on an average by 33 mm in rabi and 26 mm in kharif. Agriculture is strongly influenced by weather and climate. While farmers are often flexible in dealing with weather and year-to-year variability, there is nevertheless a high degree of adaptation to the local climate in the form of established infrastructure, local farming practice and individual experience. Agriculture is strongly dependent on weather, hence very vulnerable to weather variability and climatic changes. Climate change is expected to increase weather variability and enlarge the vulnerability of already susceptible regions, including those that are already warm and prone to drought. Rainfall patterns may shift, and with it associated crop calendars and the timing of management activities. Adaptation is essential to make existing agricultural systems resilient against climatic changes and extreme weather events and to maximize agricultural yield. To assess climate impacts and design robust adaptation strategies, it is essential to have access to reliable, region-specific climate information. Adopting available climate-smart technologies that have opened the doors for further enhancement in farm output needs to be popularized speedily and effectively.

S.K. Chaturvedi
Vice-Chancellor

RLBCAU New Vice Chancellor Appointed

A K. Singh was appointed as the new Vice-Chancellor of RLBCAU on 03rd September 2022. He was born in 1962 in Kushinagar, Uttar Pradesh, and completed his schooling at FMIC, Tamkohiraj, Kushinagar. He earned his B Sc. (Ag & A.H.), M Sc. (Agril. Extn.) and Ph.D. in Agril. Extension, from CSAUA&T, Kanpur, where he started his career as Asstt. Professor in 1987 and led the extension education programme of the University. He then joined ICAR as a Zonal Coordinator in July 2005 and was later upgraded to Zonal Project Director in 2010. He joined as Assistant Director General (Agricultural Extension) at headquarters in 2014. In the same year, he became DDG (Ag. Extension), ICAR. He has also held additional charge of Deputy Director General (Horticulture) for 9 months, Deputy Director General (Fisheries Science) for 6 months, Director and Vice Chancellor, ICAR-IARI for 2 years 5 months, and Agriculture Commissioner for 8 months. He joined as Vice Chancellor Rani Lakshmi Bai Central Agricultural University, Jhansi, on September 3rd, 2022.

Achievements: A.K. Singh is involved in policy planning, project formulation and monitoring for effective diffusion and adoption of technology through 732 KVKs spread across the country. Dr Singh, in his career spanning about 35 years, has outstandingly contributed to teaching, research and extension work in agricultural universities and the Indian Council of Agricultural Research. He has outstandingly contributed to technology dissemination for harnessing pulses leading to productivity gains. He has been instrumental in developing ICT based advisory model for farmers, the Strategic Research and Extension Plan (SREP) and the Farmer FIRST model of ICAR. He initiated programs on summer groundnut, beekeeping, vegetables, hybrid rice, summer mungbean resource conservation, climate-resilient technologies, and drought mitigation interventions, which have impacted agriculture. Principal Investigator of more than 15 research projects, he guided 10 Ph. D. and 12 M. Sc. students and organised 20 national and international seminars/conferences. Singh has chaired various committees for framing policy and evaluation. He is the Chief Editor and Editor of NAAS-rated refereed journals of national repute, reviewer of the current science journal, president and vice president of national professional societies. He has represented the country at different international forums in Mongolia, Netherlands, Thailand, USA, Lebanon, Brazil, Mexico, Sri Lanka, Bangladesh, Nepal, Ethiopia, Germany, France, Belgium, Switzerland, China, and Vietnam in relation to academic/collaborative programmes.

Awards and recognitions: His contribution to the Agricultural Extension discipline has earned him 20 awards/recognitions, including Fellowship of NAAS, Swami Shahajan, and the Saraswati Outstanding Extension Scientist Award of ICAR.

Research Publications: He has published 120 research papers, 18 books, 14 book chapters, and several studies for FAO/UNDP/World Bank-aided projects.

Technologies Evaluated

Installation of Lemon Grass Oil Distillation Unit

The lemon grass oil distillation unit was successfully installed under the leadership of the Dean, College of Horticulture and Forestry, A K Pandey, M J Dobriyal and in the presence of Amey Kale, Vinod Kumar, CoHF, on June 2022. The oil distillation unit can process 4-5 tons of fresh biomass. The oil yield may vary per the fresh biomass and variety of lemongrass. Oil content ranges from 0.7 to 0.9 per cent (fresh weight basis) with 80 % citral. Currently, the approximate value of lemongrass oil is Rs. 1100 – 1500 per Kg. Sugandhi (O.D. 19), Pragati (L.S. 48), Praman (Clone 29), and CKP 25 are some of the varieties cultivated throughout India for oil extraction. With the successful installation of the plant, the University intends to organise training and extension activities for farmers of the local region (Fig. 1).

Fig. 1: Fig: Installation of Grass Oil Distillation Unit

Rice Crop Growth Mechanism using C Band Synthetic Aperture Radar Imagery

Rice crop production is negatively impacted by global warming, leading to a decline in rice grain quality. C-band microwave images captured by the Sentinel-1 satellites were used in this study to monitor rice crop growth. The researchers wanted to understand how microwave backscatter changes with ripening, which is one of the factors that affect C-band backscatter. Rice is a major crop grown in India during the Kharif season on a large scale. Multi-temporal Synthetic Aperture Radar Sentinel-1, a Ground range detection data obtained at 12 days interval having both VH-VV polarizations, is considered for this study. This data is presumed to be suitable for crop monitoring in tropical monsoon climates, i.e. Bundelkhand region of UP for seven districts. The hierarchical Decision Rule Based supervised classification method was implemented to identify the rice area with sample segments at 10 m resolution. The paddy signatures are based on the backscatter profile, which is generated based on DB values (Fig. 2). Remote sensing-derived rice acreage statistics were compared with DES statistics computed based on the three years average for the period 2016 to 2018 (Table 1). This study indicated that Banda district has more rice growing area and Mahoba has less rice growing area in this region (Fig. 3). Study indicated that maximum transplanting during rice growing season in this region is observed to be in the second fortnight of June. Accuracy assessment was carried out using the 67 ground truth points collected during the cropping period. Overall accuracy is 79.10%, and the Kappa coefficient is 0.68. It may be concluded that C-band SAR data can be used to identify optimal harvesting time by obtaining grain filling conditions.

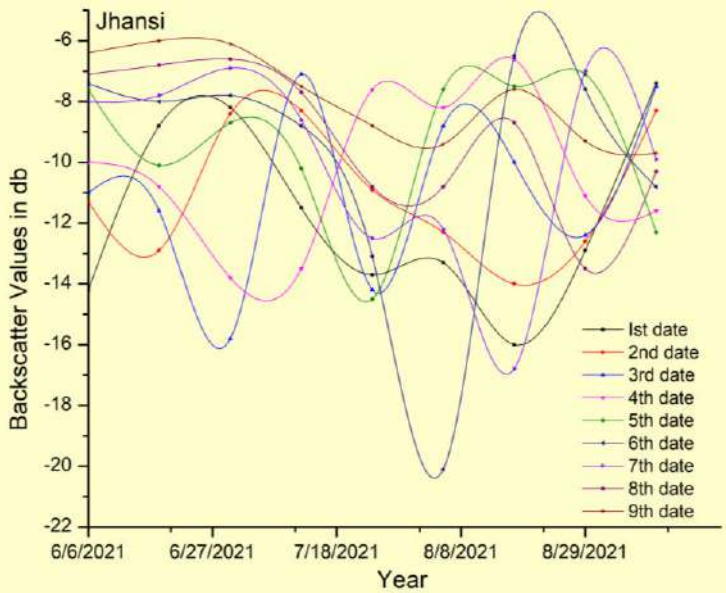

Fig. 2: *Kharif* rice scaled backscattering profile of Jhansi

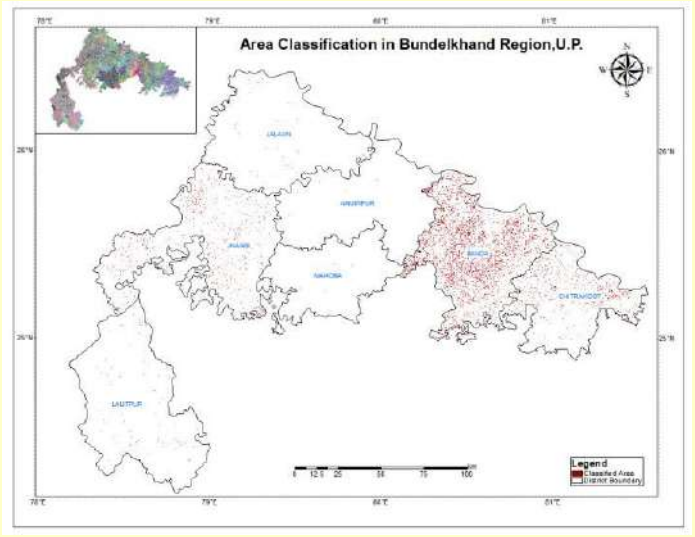

Fig. 3: Area classification map

Table 1: Relative comparison of remote sensing-based rice crop area statistics with reference to DES estimates

Study districts	Rice Area (ha)		R.D. (%)
Banda	50190.2	54943.0	-8.7
Chitrakoot	9266.3	10204.3	-9.2
Hamirpur	121.2	122.0	-0.6
Jalaun	448.8	457.3	-1.9
Jhansi	10126.2	10666.7	-5.1
Lalitpur	1093.4	1151.3	-5.0
Mahoba	70.2	64.0	9.6
Total	71316.2	77608.7	-8.1
Banda	50190.2	54943.0	-8.7

The findings proved that Sentinel-1 SAR data could produce accurate spatial maps of paddy rice. The frequency of observations made by Sentinel-1 makes it possible to keep a careful eye on the dynamics of crop area, including its presence and start and end dates. The Bundelkhand region was represented in its entirety by the three strips. Paddy rice was classified based on seven different dates processed between June 2021 and September 2021. The training polygons were utilised in the creation of paddy rice signatures. The threshold dB values were analysed so the rice pixels could be grouped into categories. On the Sentinel-1 data from the 6th of July 2018, low backscatter values were seen, which suggested starting of the crop sowing stage (field preparation for paddy planting). There was a rise in backscatter values in the subsequent collection of SAR data due to the development of the paddy crop. The overall relative deviation (R.D.) for the seven primary paddy rice-growing districts in the Bundelkhand region is 8.1 %, which is a negative value. In addition, it was found that both historical and current microwave C band SAR data have demonstrated the ability to accurately identify paddy rice (**Pavan Kumar**).

Independence Day Celebration

On India's 76th Independence Day, Hon'ble Vice Chancellor S. K. Chaturvedi hoisted the National Flag (Fig. 4) at the University campus, followed by floral tributes to the portrait of Mahatma Gandhi, the Father of the Nation, along with the University officials. He further addressed the University faculty, staff, and students. He conveyed his greetings to the University family and encouraged them to achieve great heights and growth in the coming years. He shared that GoI India was celebrating its 76th year of Independence as the *Azadi Ka Amrit Utsav* and discussed the plethora of novel schemes of the Government on the theme of Nation First, Always First. He congratulated the farmers for considerably expanding the area under pulses despite the discouragement of successive droughts and making the country self-reliant in pulses and addressed the need for an increase in the production of oilseeds.

Fig. 4: Hon'ble Vice Chancellor addressing during Flag hoisting on the Independence Day

Parthenium Awareness week

Rani Lakshmi Bai Central Agricultural University, Jhansi, organized "Parthenium Awareness Week 16-22 August 2022" (Fig. 5) for the awareness of the parthenium weed menace amongst the farming community and masses regarding its ill effects, preventive measures, and management options. The Hon'ble Vice Chancellor inaugurated the programme on 16th August 2022 at the RLBCAU campus, emphasising Parthenium eradication by collaborative effort, integrated weed management, time-bound approach and thereof. During the inauguration, scientists of ICAR-IGFRI also graced the occasion. During this programme, A R Sharma, Director of Research, RLBCAU, emphasized all aspects of Parthenium, *i.e.*, Its impact on the life of Humans, animals and plants; management of Parthenium, i.e., ecological, mechanical, biological & chemical weed management (**Rajeev Nandan and Yogeshwer Singh**).

Fig. 5: Discussion about parthenium

Teacher's Day Celebration

Teachers have been acclaimed for their selfless service all around the world from the beginning of time. They have been considered as makers of a nation. Rani Lakshmi Bai Central Agricultural University, Jhansi, celebrates Teacher's Day with great fervour and devotion to mark the birth anniversary of Sarvepalli Radhakrishnan (Fig. 6). This year, also on 5th September 2022, it was celebrated in the University. On this occasion, S.K. Chaturvedi addressed the faculty and guests and said that teachers should not favour biasedness among students and treat all students equally. Teachers and statutory officers of the University were honoured by the members of Gayatri Parivar of Jhansi.

Fig. 6: Lighting of the Lamp on Teacher's Day

Wildlife Week

World Wildlife Day was celebrated in 2022 under the theme "Recovering key species for ecosystem restoration". It aimed to highlight the central role of forests, forest species, and ecosystems services in sustaining the livelihoods of hundreds of millions of people globally and particularly of the indigenous and local communities with historical ties to forested and forest-adjacent areas (Fig. 7). Every year, from the 2nd to the 8th of October, India celebrates Wildlife Week with an aim to protect and preserve the country's fauna. This

week aims at protecting and preserving India's flora and fauna. Wildlife Week was conceptualized in 1952 with a long-term goal to safeguard the lives of the endangered and threatened species of animals. This week is commemorated to increase the awareness among the common mass regarding the role of wildlife in maintaining nature's equilibrium. Any damage done to wildlife over a prolonged period of time endangers the entire ecosystem. So it is critical to protect it systematically, and through heart and soul (**Pavan Kumar and Manmohan Dobriyal**).

Fig. 7: Exhibition of various wildlife paintings

Tree Core Extraction using Increment Borer

An increment borer is a primary tool for collecting samples for dendrochronological analyses. Dendrochronology is the study of precisely dated tree rings. Increment borers are used to extract cores from living and dead trees to analyse growth trends based on inspection of the tree's ring patterns. The increment corer takes 5-11 mm radial cores of wood from a tree and is perceived as a non-destructive sampling method. The extraction of these cores was first demonstrated to the M.Sc. Forestry (SAF) students during the Forest Biometry Course Practicals in the 2nd Semester. Students' exposure to such non-destructive sampling methods helped them develop valuable insights (**Amey Kale**).

RAWE Orientation Programme

The CoA, RLBCAU, organized a 7-Day Orientation programme, during 13-19 July 2022, under the chairmanship of S. K. Chaturvedi on "Rural Entrepreneurship Awareness Development Yojna" RAWE. The objective was to reorient students to promoting employment opportunities, entrepreneurship skill development, confidence building and knowledge updating through practical work experience in a real-life situation. Yogeshwar Singh gave me some valuable knowledge and information about the RAWE programme. Ashutosh Sharma, RAWE Coordinator, discusses the RAWE schedule and programme with the students.

International Conference Visit to Singapore

Pavan Kumar presented "Monitoring of Seasonal Variability Suspended Sediment Concentration along Coast Zone of Arabian Sea, India using OLI Sensor" at the Sea Level Conference from 12-16 July 2022 in Singapore (Fig. 8).

Fig. 8: Discussion on the sea level rise along the Singapore coast

Visit of KVK-Bharari

On August 3rd 2022, a group of about 45 students (first year, 2nd Semester), under the leadership of Sanjeev Kumar, visited (Fig. 9) the KVK Bharari to acquire first-hand knowledge about the structure and functioning of KVK and ATARI. The team was facilitated by Vimal Raj Yadav and Atik Ahamad (**Sanjeev Kumar**).

Fig. 9: Visit KVK Bharari

Exposure to the village and understanding the FLDs

Students from B.Sc Agriculture, first year, the second Semester visited the nearby village Rudra Krari of Baragoan, where the university has demonstrated Rice FLD under the IARI-CATAT programme on September 7. Students visited the village and understood different tools of PRA, such as resource mapping and transact map. They also visited the village's Anganwadi centre, Primary schools, and Self Help Group (**Sanjeev Kumar and Ashutosh Sharma**).

World Bamboo Day

World Bamboo Day- The World Bamboo Organization celebrates World Bamboo Day on 18th September every year to highlight the potential of bamboo, protect natural resources and the environment, ensure sustainable utilization, and promote bamboo cultivation for new industries and prosperous economies worldwide. To celebrate World Bamboo day, a plantation drive was organized by the CoHF, RLBCAU, on 17th September 2022 under the theme of 'Bamboo for Green Life and Sustainable Development. Fifty seedlings of Bamboo (Bambusa vulgaris) were planted at Bhojla Farm F block along the canal (Fig. 10). A. R. Sharma, Director of Research, Anil Kumar, Director of Education, Librarian, and S. S. Kushwaha graced the occasion. M. J. Dobriyal, Dean College of Horticulture and Forestry and Gaurav Sharma, Associate Professor & HoD, Department of Horticulture, were also in the plantation drive. All the faculty members and staff of the College of Horticulture and Forestry actively participated in the event (**Prabhat Tiwari, R. P. Yadav and M. J. Dobriyal**)

Fig. 10: Bamboo plantation

Creative Writing Workshop

RLBCAU organised a one-day workshop, "Agriculture, Environment, and Climate Change Writing and Publishing-Science for the Common People", on 3rd September 2022. The event was organised under NAHEP. Dwijendra Kumar, Assistant Editor, National Book Trust, Ministry of Education, New Delhi, was invited as the resource person (Fig. 11). In all, 140 students and faculty registered for the workshop to promote popular and creative writing and were guided about various publications for such writing. Patron Sushil Chaturvedi, inaugurated the event and shared insights on the impact of creativity in writing. A.R. Sharma, Anil Kumar, and S.S. Singh addressed the delegates on the significance of popularising scientific knowledge through popular writings. Kushwaha gave a presentation on research paper writing, and Co-Patron, Dobriyal, talked about the importance of such workshops for agriculture students. (**Alka Jain, Maimom Soniya Devi**)

Fig. 11: Inauguration of creative writing workshop

A Student-Centric Platform

रानी लक्ष्मीबाई केंद्रीय कृषि विश्वविद्यालय- झांसी, बांदा विश्वविद्यालय- बांदा और राजमाता विजयाराजे सिंधिया कृषि विश्व विद्यालय, ग्वालियर के 25 से अधिक प्रतिभागियों ने कार्यक्रम में अपने विचार प्रस्तुत किए। पोस्टर प्रेजेंटेशन, नारा (स्लोगन), पावरपॉइंट प्रस्तुतीकरण और मॉडल सहित चार अलग-अलग वर्गों में प्रतियोगिताओं में आयोजित किया गया । मृदा उर्वरता, जैविक खेती, प्राकृतिक खेती के सफलता की कहानियाँ, मृदा के भौतिक और रासायनिक गुणों की बहाली, जैव-अर्थव्यवस्था, एकीकृत जल प्रबंधन, शून्य बजट कृषि प्रणाली आदि के प्रमुख विषयों पर कुल नौ पावरपॉइंट प्रस्तुतियां दी गईं। इसी प्रकार 9 पोस्टर थे, जहां छात्रों ने अपनी प्रस्तुतियां कृषि में मृदा घटक पर वैचारिक रूप से प्रस्तुति की । कुछ दिलचस्प नारे जैसे "धरती को क्यों कर रहे हो बंजर, क्यों घोप रहे हो खुद को खंजर" नारे प्रमुख चर्चा में रहे । मॉडल खंड में सूचना और संचार प्रौद्योगिकी (आई.सी.टी) और इंटरनेट ऑफ थिंग्स (आई.ओ.टी) का पारंपरिक और आधुनिक उपयोग दोनों शामिल थे (चित्र 12) । नाइट्रोजन, फॉसफोरस एवं पोटैशियम, नमी सेंसर के उपयोग के साथ उन्हें इंटरनेट ऑफ थिंग्स (आईओटी) -मोबाइल एप्लिकेशन के साथ एकीकृत कर काम करने वाले मॉडल प्रमुख आकर्षण थे। एक मॉडल में यह भी दर्शाया गया है कि जल संरक्षण, भू-जल पुनर्भरण के लिए बुंदेलखंड की लहरदार स्थलाकृति का उपयोग कैसे किया जा सकता है और साथ ही यह एक एकीकृत कृषि प्रणाली का भी हिस्सा हो सकता है। प्राकृतिक खेती के घटकों जैसे बीजामृत, जीवामृत, मल्चिंग और वापासा को स्केल मॉडल के माध्यम से अच्छी तरह से प्रस्तुत किया गया । इन लीक से हटकर सोच के अलावा, प्रतिभागियों को इन अवधारणाओं को जागरूक और उन्नत बनाने और पोषित करने के लिए प्रोत्साहित तथा पुरस्कृत भी किया गया। जिसका विवरण निम्नलिखित है। **(अलका जैन).**

चित्र 12: छात्र द्वारा प्रस्तुति मॉडल

राष्ट्रीय संगोष्ठी सुफलाम

राष्ट्रीय संगोष्ठी सुफलाम – 2022 का आयोजन विश्वविधालय के सभागार में 25-26 सितंबर, 2022 को प्रारंभ किया गया। इसमे एस.के. चौधरी, उपमहानिदेशक, प्राकृतिक संसाधन प्रबंधन, आई.सी.ए.आर. नई दिल्ली, मुख्य अतिथि रहे। अध्यक्षता कुलपति, एस. के. चतुर्वेदी ने की तथा भारतीय किसान संघ के अध्यक्ष दिनेश कुलकर्णी, कृषि वैज्ञानिक चयन मण्डल के सदस्य वी.एस. द्विवेदी, चित्रकूट विश्वविद्यालय के पूर्व कुलपति एन.सी. गौतम, महामंत्री भारतीय किसान संघ मोहनी मोहन मिश्रा, कुलपति बुन्देलखण्ड विश्वविद्यालय, झाँसी मुकेश पाण्डे, विशिष्ट अतिथि रहे। सभी अतिथियों ने दीपप्रज्वलन कर दो दिवसीय संगोष्ठी का विधिवत् शुभारंभ किया (चित्र 13)।

चित्र 13: उद्घाटन सत्र:राष्ट्रीय संगोष्ठी सुफलाम

महामंत्री भारतीय किसान संघ मोहनी मोहन मिश्रा ने पंचमहाभूत तथा खाद्य सुरक्षा के बाद मृदा सुरक्षा पर विचार व्यक्त किये। चित्रकूट विश्वविद्यालय के पूर्व कुलपति एन.सी. गौतम ने देश में भूमि एवं जल उपयोग की नीति के अलावा नवकल्पित कृषि पर विस्तार से प्रकाश डाला। कुलपति बुन्देलखण्ड विश्वविद्यालय झाँसी मुकेश पाण्डे गुणवत्ता भोजन हेतु मृदा स्वास्थ्य बनाये रखने पर जोर दिया। कृषि वैज्ञानिक चयन मण्डल के सदस्य वी.एस. द्विवेदी ने कहा कि महामहाभूतों का सम्मान एवं संरक्षण करना होगा। स्वस्थ मिट्टी हेतु जैविक खादों का प्रयोग करना होगा, स्वस्थ मृदा हेतु शोध के आयाम बदलना होगा। भारतीय किसान संघ के अध्यक्ष दिनेश कुलकर्णी प्राकृतिक संसाधन के अंधाधुध प्रयोग के दुष्परिणामों पर प्रकाश डाला उन्होंने कहा इनके उपयोग पर मानसिकता बदलने की आवश्यकता है । मुख्य अतिथि उपमहानिदेशक, प्राकृतिक संसाधन प्रबंधन, आई.सी.ए.आर. नई दिल्ली एस.के. चौधरी ने कहा मिट्टी सजीव वस्तु है इसमें पानी, हवा एवं सूक्ष्मजीव हैं साथ ही साथ मिट्टी की विविधता को संरक्षित करना होगा। अध्यक्षता कर रहे कुलपति एस.के. चतुर्वेदी ने वसुधैव कुटुम्बकम की बात करते हुए कहा कि यह आज समय की मांग है। मृदा स्वास्थ्य के अनुरूप कृषि प्रणाली को ढाला जाये। इस संगोष्ठी से प्राप्त हुए अनुशंसा को देश भर में प्रसारित किये जायेंगे । स्वागत एवं आभार एस.एस. सिंह ने किया। धन्यवाद ज्ञापन योगेश्वर सिंह ने किया। मंच संचालन अर्तिका सिंह ने किया।

दो दिवसीय राष्ट्रीय संगोष्ठी सुफलाम 2022 का हुआ समापन

संगोष्ठी की अध्यक्षता कुलपति एस के चतुर्वेदी ने की। इस कार्यक्रम में चित्रकूट विश्वविद्यालय के पूर्व कुलपति एन.सी.गौतम, भारतीय किसान संघ के महामंत्री मोहनी मोहन मिश्रा, भारतीय चारागाह एवं चारा अनुसंधान संस्थान के निदेशक अमरेश चन्द्रा समेत विश्वविधालय के समस्त अधिकारी, शिक्षकगण एवं विभिन्न जिलों से किसान भी उपस्थित रहे (चित्र 14)। इस मृदा केन्द्रित राष्ट्रीय संगोष्ठी में कुल 6 तकनीकी सत्र का आयोजन किया गया। जिनमे एकीकृत मृदा एवं जल प्रबंधन, स्थानीय या देशी संसाधनों के माध्यम से मृदा की उर्वरता शक्ति को वहाल करना, बुन्देलखण्ड क्षेत्र में सतत मृदा स्वास्थ्य की सफलता की कहानी, मृदा कायाकल्प के लिए पशु आधारित खेती वानिकी, कृषि वानिकी एवं सहायक उद्यम के माध्यम से मृदा स्वास्थ्य में सुधार, प्राकृतिक एवं जैविक कृषि द्वारा टिकाऊ मृदा स्वास्थ्य पर व्यापक रूप से चर्चा हुई।

चित्र 14: संगोष्ठी सुफलाम के दौरान बातचीत

भारतीय किसान संघ के महामंत्री मोहनी मोहन मिश्रा ने अपने व्याख्यान में कहा कि आज मृदा उपयोग योजना अपनाने की जरूरत है। प्रथम तकनीकी सत्र में खेतों में वर्षा जल का संचयन, खेत तालाब का निर्माण तथा भूमि उपयोग योजना पर आर.एस. यादव एवं एम.एस. रघुवंशी ने परिचर्चा की। द्वितीय सत्र में ए.के. विश्वास तथा ए.के. सक्सेना ने मृदा सुधार तथा सूक्ष्म जीवों की विविधता के साथ फसल अवशेष चक्रण पर विस्तार से समझाया (चित्र 15)।

चित्र 15: राष्ट्रीय संगोष्ठी सुफलाम के वक्ता का सम्मान

तृतीय तकनीकी सत्र में मानवेन्द्र सिंह, ने सहभागी जल संचयन एवं इसके विवेकपूर्ण उपयोग, सुश्री ब्रह्मकुमारी बी.के. मनोरमा ने योगिक खेती तथा मुकेश शहगल में जैविक खेती में जैव नियंत्रण की जरूरतों पर जोर दिया। चौथे सत्र में अमरेश चन्द्रा ने दलहनी चारा फसलों एवं प्राकृतिक खेती द्वारा मृदा सुधार तथा के.के. सिंह ने दुधारू पशुओं के उपयोग से मृदा स्वास्थ्य पर प्रकाश डाला। पांचवे सत्र में एस.के. तिवारी ने बुंदेलखण्ड में कृषि वानिकी एवं सहायक उद्यम के माध्यम से मृदा सुधार एवं पोषण सुरक्षा पर विस्तार से चर्चा की। छठे एवं अंतिम सत्र में एम.सी. मन्ना ने बुंदेलखण्ड की खराब हुई मिट्टी को सुधारने पर प्रकाश डाला। बुंदेलखण्ड के विभिन्न जिलों से आये तथा देश के कई राज्यों से आये वैज्ञानिकों ने संक्षेप में अपने विचार प्रकट किये। इस संगोष्ठी का आयोजन रानी लक्ष्मी बाई केन्द्रीय कृषि विश्वविद्यालय झाँसी, बुंदेलखण्ड विश्वविद्यालय झाँसी, भारतीय कृषि अनुसंधान परिषद्, भारतीय चारागाह एवं चारा अनुसंधान संस्थान, भारतीय किसान संघ एवं नाबार्ड के संयुक्त प्रयासों से सम्पन्न हुआ। प्रशांत जाम्भुलकर ने संगोष्ठी के अंत में सभी छः तकनीकी सत्रों का सारांश प्रस्तुत किया। इस संगोष्ठी का यूटयूब पर भी जीवन्त प्रसारण किया गया जिसमें तकनीकी संचालन तनुज मिश्रा एवं सौरभ सिंह गौर ने किया। संगोष्ठी के आयोजक सचिव के रूप में योगेश्वर सिंह एवं गौरव शर्मा ने अपनी भूमिका निभाई। धन्यवाद ज्ञापन संगोष्ठी अध्यक्ष, एस.एस. सिंह ने किया। मंच संचालन अर्तिका सिंह ने किया। **(एस.एस. सिंह, योगेश्वर सिंह एवं गौरव शर्मा)**

Farm Advisory Published

दिनांक	सलाह	लेखक
01 July	बकरियों में होने वाले पीपीआर (बकरीप्लेग) से बचाव के लिए टीका लगवाए पशुपालक	प्रमोद सोनी
11 July	तिल की खेती फायदे का सौदा	अर्तिका सिंह एवं अनिल राय
12 July	कम लागत तकनीक से मक्के की अधिक उपज के गुर	मनोज कुमार सिंह
15 July	जैविक कीटनाशकों से फसलों को करें सुरक्षित	अनिल राय, योगेश्वर सिंह
20 July	मौसम खराब की स्थिति में किसान बिजली से रहें सावधान	अनिल राय, योगेश्वर सिंह
21 July	खरीफ फसलों की बीमा के लिये 31 जुलाई तक करें पंजीकरण	संजीव कुमार, आशुतोष शर्मा
25 July	मानसून में कम लागत से सीड बॉल विधि द्वारा बहु-उद्धेशीय वृक्षों का रोपण	गरिमा गुप्ता, पंकज लवानिया
27 July	बुंदेली सागौन से बढ़ा सकते हैं आय	रविन्द्र ढाका, स्वाति शेडगे
29 July	सोयाबीन की फसल में खरपत वार प्रबंधन	योगेश्वर सिंह, अनिल राय
31 July	गौवंशों में तेजी से फैल रही घातक बीमारी गांठ दार त्वचा रोग या लंपी स्किन बीमारी	प्रमोद सोनी
01 August	फलदार पौधों को लगा कर किसान बढ़ा सकते हैं आय	रंजीत पाल, गोविन्द विश्वकर्मा
03 August	मौसम बदलाव संबंधी दी सलाह	अनिल राय, योगेश्वर सिंह
04 August	मक्का की फसल में खरपतबार प्रबंधन करना बेहद जरूरी	अनिल राय, योगेश्वर सिंह
10 August	अब मूंगफली में खरपतवार रोकने को तैयार रहें किसान	गुंजन गुलेरिया, योगेश्वर सिंह
18 August	मुर्गियों की रानी खेत बीमारी से बचाव	प्रमोद सोनी
22 August	चंदन की खेती से किसान होंगे मालामाल	पंकज लावानिया, पवन कुमार
22 August	दलहन फसलों में खरपतवार की करें निगरानी	अनिल राय, अर्तिका सिंह
23 August	खाली पड़े खेत में तोरिया की खेती करें	योगेश्वर सिंह, अनिल राय
25 August	सैनिक कीट से मक्के की फसल का बचाव की सलाह	ऊषा, माईमोम सोनिया देवी
27 August	खरीफ फसलों को जल भराव से बचाऐं	अनिल राय, योगेश्वर सिंह
29 August	अमरूद की फसल को फलमक्खी के प्रकोप से बचाऐं	ऊषा, माईमोम सोनिया देवी
29 August	काला माहू कर सकता है मूंगफली में नुकसान	सोनिया , राकेश चौधरी
30 August	पीला मोजेक रोग से उड़द मूंग की फसल को बचाएं	मीनाक्षी आर्य, प्रशांत जम्भुलकर
31 August	किसान सफेद गिडार से मूंगफली को बचा कर रखें	राकेश चौधरी, माईमोम सोनिया देवी
01 Sept.	खाली खेत पड़ा हो तो अभी तोरिया की करें बुवाई	अर्तिका सिंह
02 September	धान की फसल को पीलातना छेदक कीट से बचाएं	विजय मिश्रा, ऊषा
03 September	अदरक की फसल को राइजोम गलन रोग से बचाएं	वैभव सिंह, प्रशांत जाम्भुलकर
06 September	अब अफ्रीकन स्वाइन फीवर का खतरा बढ़ा	प्रमोद सोनी
07 September	किसान जड़ों को देखें कहीं गलन रोग तो नहीं	वैभव सिंह, प्रशांत जाम्भुलकर
10 September	प्राकृतिक खेती से मानव जीवन व मृदा रहती है स्वस्थ	अनिल राय, योगेश्वर सिंह
20 September	मूंगफली को बीमारियों से बचाएं	अनीता पुयाम, शुभा त्रिवेदी
22 September	तिल की फसल को इल्ली से बचाएं	विजय मिश्रा, ऊषा
29 September	रेबीज से बचाव के लिये टीकाकरण की सलाह	प्रमोद सोनी
30 September	किसानों को बीजों की पहचान होना जरूरी	निशांत भानु, योगेश्वर सिंह

तकनीकी प्रसार साहित्य (हिंदी-फोल्डर)		
बुंदेलखंड में राई/ सरसों की वैज्ञानिक खेती	राकेश चौधरी, अर्तिका सिंह, आशुतोष शर्मा	प्र.शि.नि./त.प्र.सं/फो./2022/ 49
बहुपयोगी वन वृक्षों की नर्सरी (पौधशाला) तकनीक	प्रभात तिवारी, गरिमा गुप्ता, आर पी यादव, एम के डोबरियाल	प्र.शि.नि./त.प्र.सं/फो./ 2022/50
बुंदेलखंड में उन्नत पद्धति से वांस रोपण	गरिमा गुप्ता, प्रभात तिवारी, एम के डोबरियाल	प्र.शि.नि./त.प्र.सं/फो./ 2022/51
मलबारनीम (मिलिया दुबिया) की उन्नत खेती	प्रभात तिवारी, गरिमा गुप्ता, एम के डोबरियाल	प्र.शि.नि./त.प्र.सं/फो./ 2022/52
अश्वगंधा की वैज्ञानिक खेती एवं शस्य क्रियाएँ	अभिषेक कुमार, एम के डोबरियाल, अनिल कुमार	प्र.शि.नि./त.प्र.सं/फो/ 2022/53

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Invited Lectures/Training

- Kumar, A. “Aao Laut Chale Jado Ki Aur” at Patanjali Kisan Seva Samiti & Patanjali organic Research Institute on June 11th, 2022.
- Kumar, A. "India's Policy for Promotion of Innovations on Nano Biotechnology and Generation of Intellectual Property Rights" during Refresher Course on IPR and Patent Development & Quality Research and Teaching Methodology organized by UGC-HRDC JNV Jodhpur in association with B.U. on 13th July 2022.
- Kumar, A. "Empowering farmers through new emerging technologies" in Regional Advisory Group (RAG) meeting on 14th July 2022.
- Kumar, A. "National Security for Pregnant Women and Children for Healthy Future", National Nutrition Month, B.U., Jhansi on 15th September 2022.
- Jain, A. Integrated Command and Control Centre Awareness Training, organised by Jhansi Smart City Limited on 20th August 2022.

Award

Tanuj Misra, Teaching-Cum-Research Associate (Computer Science), was awarded National Award for Excellence in Agricultural Research "Jawaharlal Nehru Award for P.G. outstanding doctoral thesis research in agriculture and allied sciences" in social science category on July 16, 2022, by ICAR, New Delhi (Fig. 16).

Fig. 16: Award for excellence in agricultural research

Front Line Demonstrations

FLDS Sesame-SCSP

25 Sesame FLDs were undertaken under the IIPR-SCSP project in which farmers of the Datia district of Madhya Pradesh were selected (Fig. 17). Under this programme, several agri-inputs were provided (seed, fertiliser, nano-urea, Emamectin benzoate and Mancozeb+ Carbendazim). A training was imparted on Crop Production Technology of Sesame on 2nd July 2022, in which scientists from RLBCAU delivered lectures (**Artika Singh, Ashutosh Kumar, Vaibhav Singh, Bharat Lal**).

Fig. 17: Distribution of seed and fertilizers

FLDs Groundnut (DGR-Gujarat, SCSP)

A training followed by the distribution of Groundnut seeds was organised at the university campus on 7th July 2022 (Fig. 18). More than 50 farmers participated in the programme. The training emphasised scientific cultivation of groundnut, efficient use of fertilisers, insect and pest management, oil quality, etc. Plant protection chemicals were distributed among the beneficiaries (**Rakesh Chaudhry, Ashutosh Sharma, Shravan Shukla, Soniya Devi**).

Fig. 18: Seeds and fertilisers distribution to farmers

FLD Millets (SCSP-IIPR, Kanpur)

Under the SCSP program, minor millet FLDs are being demonstrated on the Farmers' fields of Village Noner, District Datia, Madhya Pradesh. Quality seeds of Kodo millet variety TNAU-86, barnyard millet variety COKV-2, and other agri-inputs like nano urea and NPK fertilisers were distributed to 100 farmers (Fig. 19). Farmers were informed about the crop production techniques of minor millets (**Rumana Khan, Susheel Kumar Singh, Vijay Mishra, Ashutosh Singh, Pavan Kumar**)

Fig. 19: Distribution of seed & agri-inputs among farmers

FLDs Maize (IIMR-SCSP & General)

Out of 77 demonstrations to be organised under the SCSP programme and 20 under the General plan, a series of demonstrations were organised at Kunwarpura village of Tikamgarh, Nayakhera (Jhansi), Barkhiriya, Karitoran Emiliya villages of Lalitpur district and, Radhapur of Niwari district. Improved seed varieties of maize (Shaktiman-5, DHM-117 and DHM-121) were given to the beneficiary farmers under the programme (**Susheel Kumar Singh, Usha M. K. Singh, Vijay Kumar Mishra, Ashish Kumar Gupta**)

FLD on Maize

A farmers' training was organised at Semta Bhagnagar village of Lalitpur District on 20th November 2021 during Kharif-2021 under FLD on maize. In all, 80 Schedule Caste farmers benefitted from the training. The significant aspects of the training were: sharing information about FLDs practices vs farmers' practices, timely and free-of-cost supply of quality seeds & fertilisers to the farmers, insect-pest management of maize crops, soil health cards, and soil testing.

Natural Resource Management (SCSP-IIPR, Kanpur)

A total of 35 demonstrations have been taken up at Palinda village of Jhansi district where the improved variety of rice (10 farmers, variety DRR-42), maize (10 farmers, variety-NMH 920), Urdbean (5 farmers, variety- PU-35), and Mung (10 farmers, variety- SML 668) along with Nano urea and Herbicide are given to farmers (**Yogeshwar Singh, Anil Kumar Rai, Rajeev Nandan**).

IARI-CATAT Programme

Centre for Agricultural Technology Assessment & Transfer Rice FLDs: on 9th July 2022, a training and seed distribution program was organised among Rudra Karari village, Jhansi rice farmers. Twenty kilograms of improved variety PUSA-1850 seeds were given to them (Fig. 20). The farmers were also sensitised about nursery raising, weed management, and

stubble management after rice harvesting (**Ashutosh Sharma, Nishant Bhanu, Sanjeev Kumar, Yogendra Mishra**)

Fig. 20: Distribution of fertilisers and seeds

FLDs Vegetables (SCSP)

A Vegetable seed distribution program and training of the Scheduled Caste farmers was organised on 11th July 2022 at Dimarpura village of Jhansi district (Fig. 21). The farmers were provided improved seeds of vegetables such as *lobia*, ladyfinger and *gwar*. Discussions were held with the farmers on scientific cultivation, water management, and other important aspects (**Arjun Lal Ola, Ranjit Pal, Sourabh Singh**).

Fig. 21: Distribution of vegetables among farmers

FLD Fruit Crops (SCSP-IIPR, Kanpur)

Under the FLD on fruit crops by ICAR-IIPR, Kanpur, about 25 farmers were selected and provided with fig and custard apple plants at Kulua and Laxmanpura villages of Newari district on 19th July 2022 (Fig. 22). Fifty farmers were selected and provided fig and jackfruit plants at Khajuria, Kurmai, and Tera villages of Lalitpur district on 29th and 30th July 2022. Forty farmers were selected and provided Papaya plants at Parwai village of Jhansi on 21st September 2022. They were also guided about fruit plants' planting methods, techniques, and aftercare (**Ranjit Pal and Govind Vishwakarma**)

Fig. 22: Distribution of critical inputs among farmers

FLD- Medicinal and Aromatic Plants (SCSP-IIPR, Kanpur)

About 100 farmers were selected and benefitted with medicinal and aromatic plants at Kulua and Laxampura villages of Niwari district (19th July), Khajuria (29th July) and Karmai village of Lalitpur (8th September). At Parwai village of Jhansi district on 23rd September (Fig. 23). They were also informed about planting and aftercare methods for Aloe vera, Tulsi, Lemon Grass and Ashwagandha plants (**Vinod Kumar, Amey Kalae, Pankaj Lavania**)

Fig. 23: Distribution of plants among farmers

FLDs Agro-forestry (SCSP-IIPR, Kanpur)

Kharif FLDs on agroforestry were conducted among 250 farmers of Niwari, Talbehat, and Lalitpur under the Scheduled Caste Sub-Plan funded by ICAR-IIPR, Kanpur (Fig. 24). Saplings of multipurpose trees such as Neem, Safed Teak, Karanj, Sehjan, Shahtoot, Teak, Reetha, Bakain, Imali, Siris etc., were distributed among farmers. Additionally, plantation activity was carried out in the farmers' fields (**Prabhat Tiwari, Garima Gupta, Pavan Kumar, Ravindra Dhaka**).

Fig. 24: Distribution of plants

FLD on Flower (SCSP-IIPR, Kanpur)

FLD on Flower is being conducted under the Schedule Caste Sub Plan in 25 farmers in village Runder Blora of Jhansi district and Katili village of Datia district. Improved varieties of marigold seeds, "Punjab Gainda -1" and "Bijli" varieties of annual chrysanthemum, were distributed to the farmers (Fig. 25). At the time of seeds distribution, training was also given on technical information about scientific cultivation and profits and better marketing of flower crops through farmers' groups (**Priyanka Sharma, Gaurav Sharma, Prince Kumar**).

Fig. 25: Distribution of flower seed among farmers

FLDs (AICRP-Mustard)

50 FLDs were conducted with mustard varieties viz. Giriraj, RH-749, RH-406 and PM-30 during Rabi 2020-21. Under improved practices, a yield increase of 20.97 per cent was observed over local varieties with farmers' practices.

Training

Training on White Button Mushroom Production

The Department of Plant Pathology organised the training during July 02–07, 2022 (Fig. 26). Theoretical (lectures & presentations), as well as hands-on training on different steps of cultivation of white button mushroom, was conducted. The students were guided on the preparation of mushroom spawn, wetting, composting, mixing of ingredients & heap formation, casing soil preparation, spawning crop room management, harvesting and processing. They were also provided knowledge on the basics of white button mushroom production, crop room types, design and layout, uses of spent compost and mushroom production economics. Certificates and a copy of the training manual and folders were also provided to the students (**Shubha Trivedi, Vaibhav Singh, P. P. Jambhulkar**).

Fig. 26: Distribution of certificates and training manual

FPOs and CEO Members Meet

The university participated in the FPOs and CEO members meeting on 28th July 2022 at ICAR-Indian Grassland and Forage Research Institute, Jhansi, over the theme of multipurpose forage, natural farming, and capacity building (Fig. 27). IGFRI Jhansi jointly organised the meeting, UP FPO Association, Lucknow, and Amraukh Earth Jaiv Urja farmer Producer Company Limited under Jhansi Mandal (Jhansi, Lalitpur, and Jalaun). (**Tanuj Misra, Sanjeev Kumar, Shailendra Kumar**)

Fig. 27: FPOs and CEO members meet

Board of Directors Training Meet

On 29th August, faculties participated in the Board of Directors meeting at the Jhansi Agricultural Department Headquarters, where more than 30 directors and farmers gathered under "Formation of FPOs under Central Sector Scheme for formation and Promotion of 1000 FPOs" (Fig. 28). The core idea of the mobile application to be developed

by University funded under the NABARD project to facilitate the FPOs marketing, was presented (**Tanuj Mishra, Sanjeev Kumar, Arpit Suryawanshi and Shailendra Kumar**)

Fig. 28: Board of directors training meet

Online Lecture Series

Atal Jai Vigyan 21st Lecture Series 2022

The "Atal Jai Vigyan" lecture series has been initiated to boost the knowledge and learning of RLBCAU students and faculty. Renowned personalities and achievers are invited to deliver lectures. Dr N. C. Gautam, former Vice Chancellor, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, on July 19, 2022, delivered the Atal Jai Vigyan 21st lecture. The lecture was entitled "Agriculture in the Next Decade" (Fig. 29). During the lecture, Dr N.C.Gautam highlighted the significance of genetic engineering and genetic resources for developing new ideotypes possessing genes for better adaptation and higher nutritional value. He said innovative research, like AI-based technology, drones, etc., have opened new vistas for Indian agriculture (**Shubha Trivedi, Shrawan Shukla, Vaibhav Singh and Nishant Bhanu**)

Fig. 29: Closing ceremony of lecture series

Atal Jai Vigyan 22nd Lecture Series 2022

This talk was delivered by Dr Sunil Pareek, Director (IQAC) & HOD (Agriculture & Environmental Sciences), NIFTM, Haryana. The lecture delivered on September 3rd, 2022, was entitled "The Fourth Industrial Revolution in the Food Industry: Emerging Food Trends and Industrial Technologies" (Fig. 30). During the talk, Dr Pareek confabulates that there is a need to include innovative technologies in the food industry globally. To achieve the mission 2030 in the food industry, innovative research like artificial intelligence, blockchain, drone to big data and internet-of-things (IoT) must be adopted (**Shubha Trivedi, Shrawan Shukla, Vaibhav Singh and Nishant Bhanu**)

Fig. 30: Discussion during atal jai vigyan lecture series

Radio Talk

Name	Topic	Centre	Date
Sukanya Mishra	Management of Lemon Orchard	AIR, Jhansi	8th August

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